Application No.: 10/742,129
First Inventor: Oleg Kiselev
Filing Date: December 19, 2003
Title: METHOD OF DETECTION OF DATA CORRUPTION IN MIRRORED STORAGE
Attorney Docket No.: VRT0058P2US
Reply to Notice of Allowance of: July 18, 2006

REPLACEMENT SHEET

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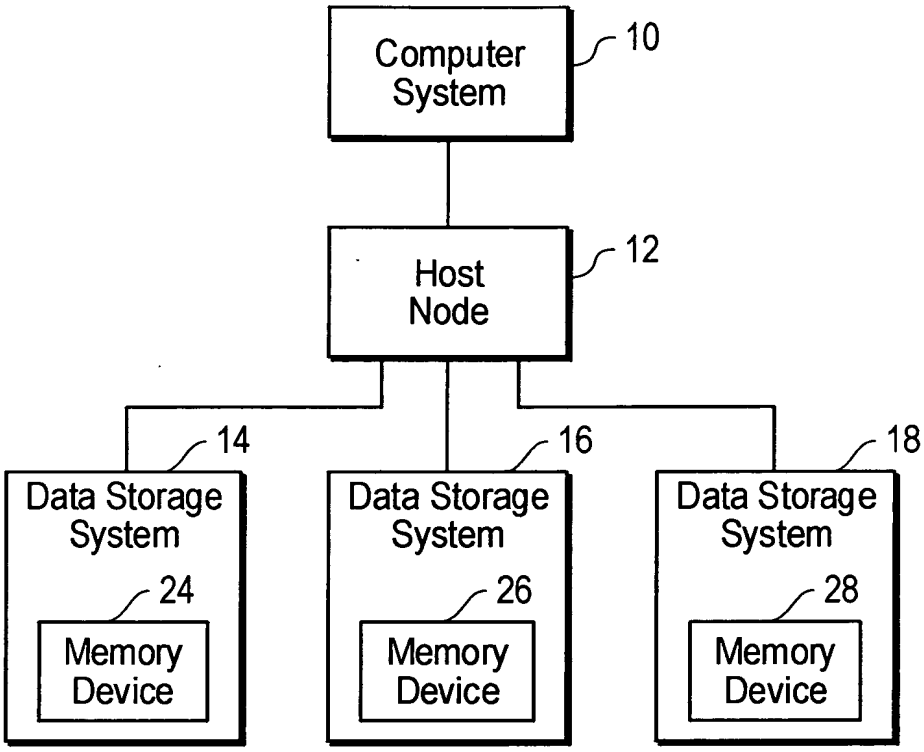

FIG. 1
(Prior Art)

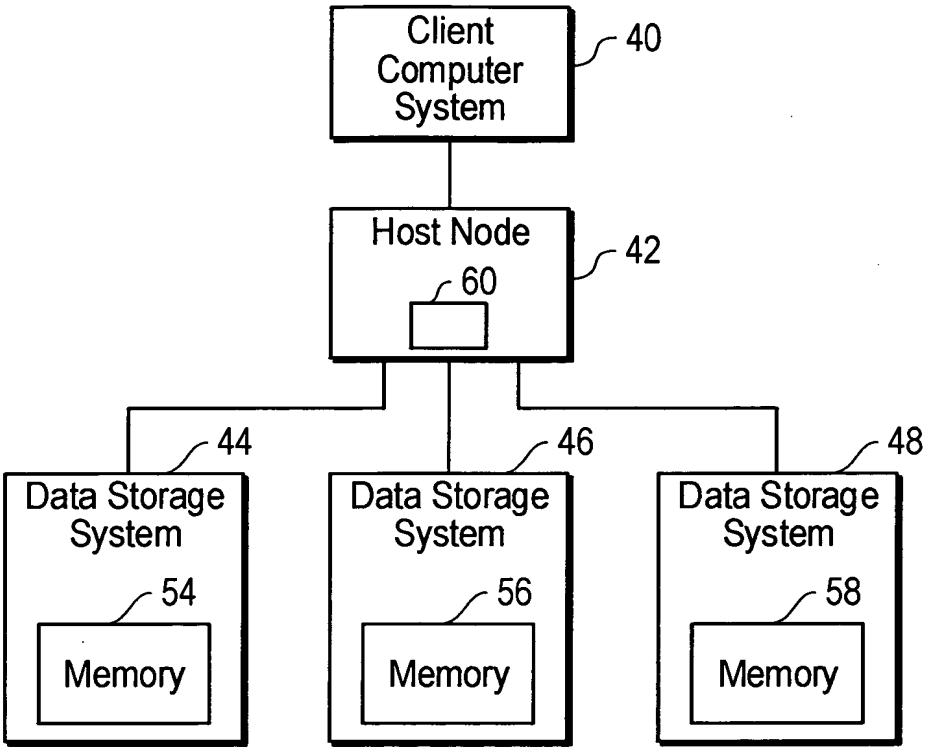

FIG. 2

n	Data Identification	Mirror Read History	Time Stamp
1	Block 4	M_0	T_0
2	Block 15	M_0, M_1	T_1
3	Block 10	M_0, M_1, M_2	T_2
4	Block 27	M_0, M_1, M_2	T_8
5	Block 2	M_0	T_6
6	Block 85	M_0, M_1	T_{12}

66

FIG. 3

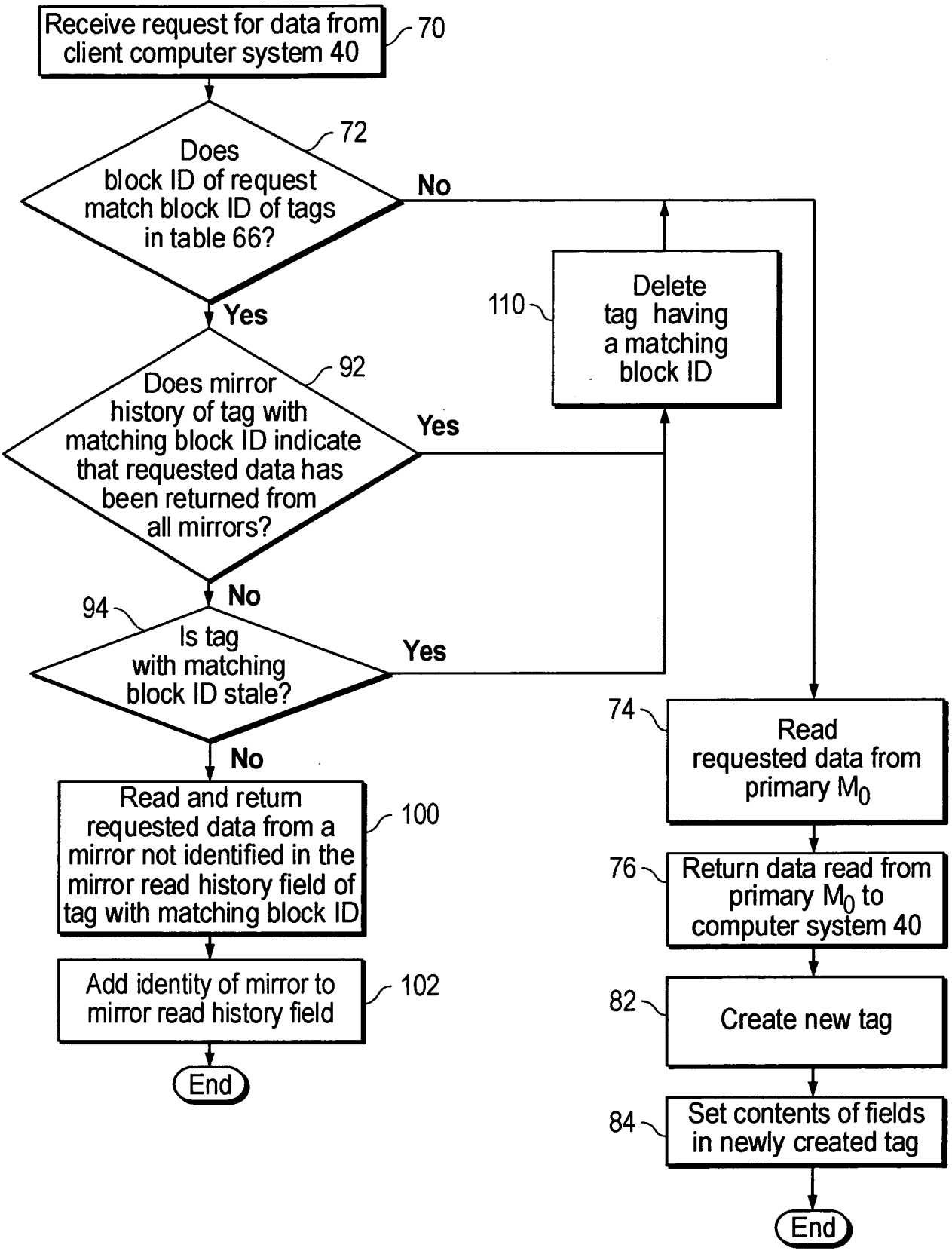
Receive request for data from client computer system 40
70
Does block ID of request match block ID of tags in table 66?
72
No
Yes
Delete tag having a matching block ID
110
Does mirror history of tag with matching block ID indicate that requested data has been returned from all mirrors?
92
Yes
No
Is tag with matching block ID stale?
94
Yes
No
Read and return requested data from a mirror not identified in the mirror read history field of tag with matching block ID
100
Add identity of mirror to mirror read history field
102
End
Read requested data from primary M_0
74
Return data read from primary M_0 to computer system 40
76
Create new tag
82
Set contents of fields in newly created tag
84
End

FIG. 4

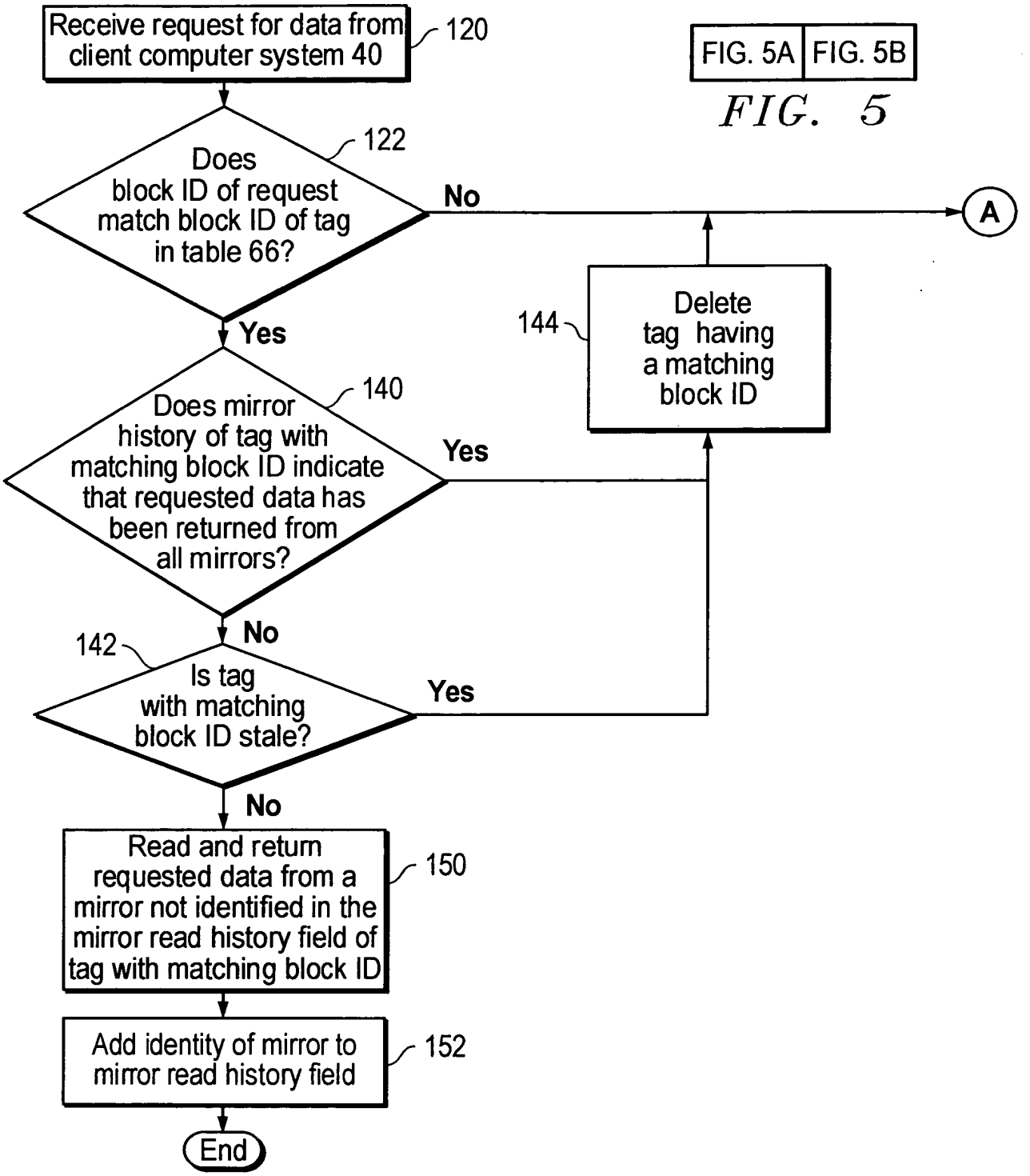

FIG. 5A | FIG. 5B

FIG. 5

FIG. 5A

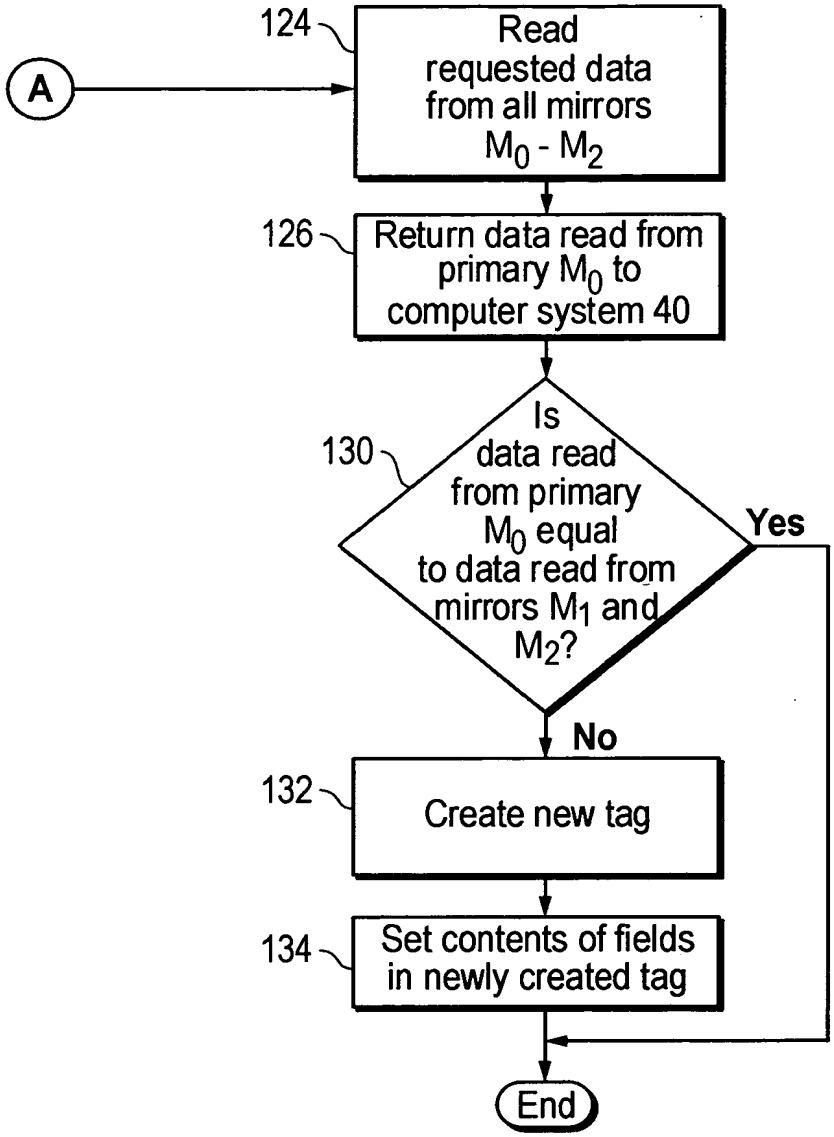
A
124
Read requested data from all mirrors M_0 - M_2
126
Return data read from primary M_0 to computer system 40
130
Is data read from primary M_0 equal to data read from mirrors M_1 and M_2?
Yes
No
132
Create new tag
134
Set contents of fields in newly created tag
End

FIG. 5B

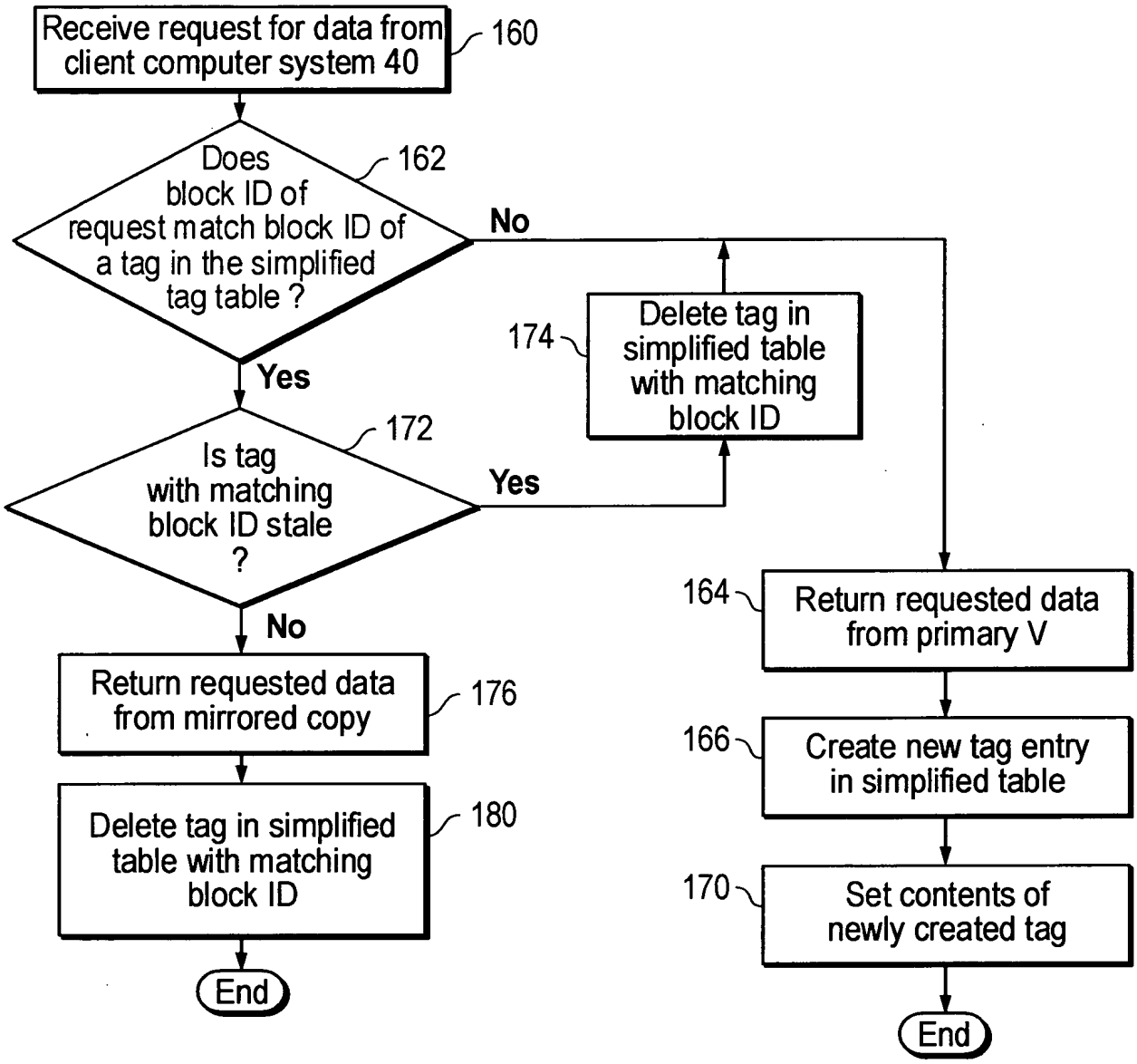
Receive request for data from client computer system 40
160
Does block ID of request match block ID of a tag in the simplified tag table ?
162
No
Yes
Delete tag in simplified table with matching block ID
174
Is tag with matching block ID stale ?
172
Yes
No
Return requested data from primary V
164
Return requested data from mirrored copy
176
Create new tag entry in simplified table
166
Delete tag in simplified table with matching block ID
180
Set contents of newly created tag
170
End
End

FIG. 6

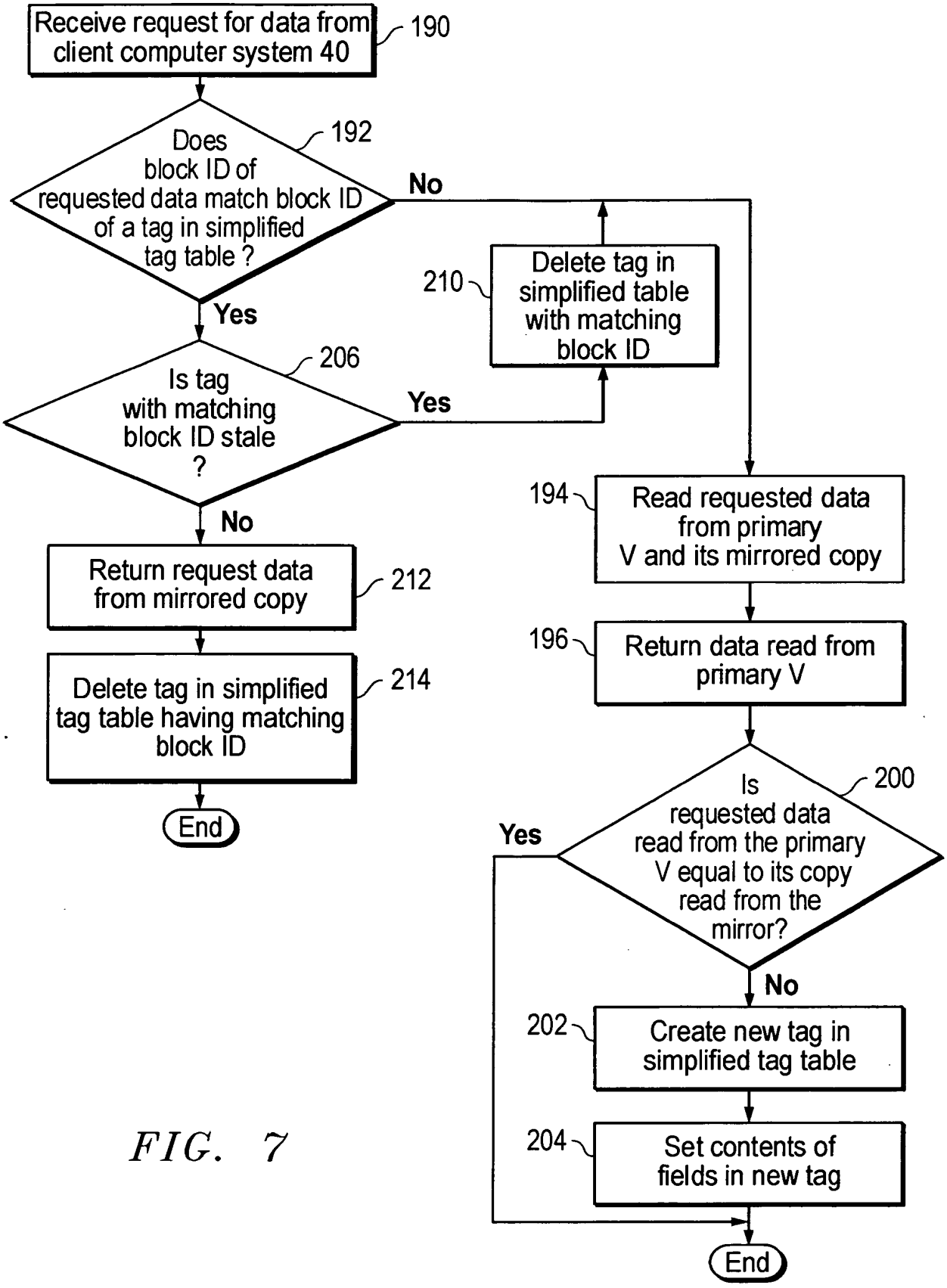
Receive request for data from client computer system 40
190
Does block ID of requested data match block ID of a tag in simplified tag table ?
192
No
Yes
Delete tag in simplified table with matching block ID
210
Is tag with matching block ID stale ?
206
Yes
No
Return request data from mirrored copy
212
Delete tag in simplified tag table having matching block ID
214
End
Read requested data from primary V and its mirrored copy
194
Return data read from primary V
196
Is requested data read from the primary V equal to its copy read from the mirror?
200
Yes
No
Create new tag in simplified tag table
202
Set contents of fields in new tag
204
End

FIG. 7